

**REMARKS**

Claims 1-33 are pending in the present application. Claims 1-14 and 24-29 are rejected.

**Applicants' Response to Claim Rejections under 35 U.S.C. §103**

**Claims 1-3, 5, 11, 13 and 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ide (U.S. Patent No. 6,186,765) in view of Koji (JP 11-105157).**

It is the position of the Office Action that Ide discloses the invention as claimed, with the exception of heating using radiation. The Office Action relies upon Koji to provide this teaching.

Ide is directed at an apparatus for forming a molded multilayer product. The apparatus includes a plastication means 10 having T-dies 14a, 14b and 14c, which include injection units 10a, 10b and 10c. These injection units 10a, 10b and 10c output to nozzles 12a, 12b and 12c. See Figure 3. Nozzles 12a, 12b and 12c output molten monolayers 16A, 16B and 16C. After being output from the nozzles, the molten monolayers 16A, 16B and 16C are laminated using a laminating mechanism 26. This laminating mechanism 26 includes rollers 26a and 26b which sandwich the layers together to create intermediate molten multilayer 16. See column 6 lines 1-20. Next, the intermediate molten multilayer 16 is cut by cutting mechanism 20. After being cut by cutting mechanism 20, the intermediate molten multilayer 16 is delivered to the bottom half mold 24b. See column 8, lines 4-7. Upon delivery to the bottom half mold 24b, the intermediate molten multilayer 16 is compressed by lowering the top half mold 24a onto the bottom half mold 24b in order to achieve the desired mold shape.

In response, Applicants respectfully submit that Ide does not disclose or suggest several of the claimed features as the Office Action alleges. First, each of the independent claims recites co-extrusion. Ide does not disclose or suggest co-extrusion. Instead, Ide discloses three separate extrusions from each of T-dies 14a, 14b and 14c. These molten monolayers 16A, 16B and 16C are then laminated by laminating mechanism 26. In order to be co-extruded, monolayers 16A, 16B and 16C would have to be extruded from a single T-die, and lamination would not be necessary. Furthermore, Koji also does not disclose co-extrusion.

Next, independent claims 1, 5, and 13 require that the decorative layer is “higher than the molding main body in hardness and melt temperature.” The Office Action relies on column 9, lines 11-25 to provide this teaching. The Office Action appears to identify monolayer 16B as the main body, and thus it is presumed that the Office Action regards monolayer 16A as the decorative layer. Monolayers 16A and 16B sandwich monolayer 16C. See Figure 4. The passage at column 9, lines 11-25 does not disclose or suggest that monolayer 16A is higher than monolayer 16B in hardness and melt temperature. Rather, this passage merely states that “[t]he temperatures of the molten polymer forming the skin layer 16A and the base layer 16B are higher than that of the molten polymer for the mid-layer 16C by temperatures in the range of 50 to 100°C.” Thus, this passage compares skin layer 16A with mid-layer 16C, and compares base layer 16B with mid-layer 16C. However, this passage does not compare skin layer 16A and base layer 16B with each other. Since Ide is silent as to any difference in hardness and melt temperature between skin layer 16A and base layer 16B, Ide does not disclose or suggest a

decorative layer that is “higher than the molding main body in hardness and melt temperature.”

Furthermore, Koji also does not disclose this.

Next, independent claims 1, 5, 13 and 24 require “heating and softening an end portion of the molding body.” The Office Action alleges that Ide discloses this, citing column 9, lines 11-25 and 47-49. While Ide states that “[t]he detached mold is heated by the heating/cooling unit 38,” this passage refers to heating of a closed top and bottom mold halves 24a and 24b. As noted above, Ide does not compare the skin layer 16A and base layer 16B with each other. Thus, the heating by the heating/cooling unit does not disclose “maintaining a condition in which the decorative layer is harder than the molding layer,” since Ide never discloses achieving this condition initially. Furthermore, Koji also does not disclose such a heating and softening.

Furthermore, independent claims 1, 5, 13 and 24 require that the “press forming is performed in an oblique direction with respect to the longitudinal direction of the molding, so that the decorative layer of the end portion moves closer to the fixed die.” This is illustrated for example in Figures 9, 10 and 14. The Office Action alleges that Ide discloses this, citing Figure 5 and elements 24a and 24b. Figure 5 illustrates an overview of the system of Ide. As discussed above, after cutting by the cutting mechanism 20, the intermediate molten multilayer 16 is delivered to the bottom mold half 24b. Along with the top mold half 24a, the bottom mold half 24b is a component of compression molding machine 18, which molds the intermediate molten multilayer 16 into the desired shape. However, the press forming is not performed in “an oblique direction with respect to the longitudinal direction of the molding.” Rather, Ide states that:

[t]he compression molding machine 18 is provided with a mold consisted of a top half mold 24a and a bottom half mold 24b, and a mold clamping mechanism to move the top half mold 24a vertically relative to the bottom half mold 24b and to close the mold tightly. Column 5, lines 41-45 (emphasis added).

Thus, the top half mold 24a moves perpendicularly with respect to the longitudinal direction of the molding, not obliquely. Additionally, the decorative layer of the end portion of Ide does not move closer to the fixed dye, as required by the independent claims. Since the entire intermediate molten multilayer 16 is held within the bottom mold half 24a, one part of it cannot move closer to the bottom mold half 24a. However, in the present embodiments, since there is an “over-hang” of the molded body, the oblique movement will force a portion of the end of the molded body towards the fixed die. See Figures 10 and 14, for example. In Ide, there is no distinction between the manner in which the end portions of the intermediate molten multilayer 16 are molded as compared with the entire intermediate molten multilayer 16. Furthermore, Koji also does not disclose such an oblique movement.

Next, it is the position of the Office Action that although Ide does not disclose heating using irradiation, that it would have been obvious “use Koji’s near infrared heating during Ide’s molding process in order to efficiently heat the compression die.” In response, Applicants respectfully submit that it would not have been obvious to modify Ide as alleged by the Office Action. In Ide, the heating/cooling device heats a closed set of a half molds 24a and 24b containing the intermediate molten member 16 within it. The intermediate molten member 16 is not exposed during this step. Accordingly, it would not have been obvious to provide for infrared heating. Since the intermediate molten member 16 would be enclosed in a mold, the

infrared light would not be incident on the intermediate molten member 16. The heating would thus be ineffective, and thus would not have been obvious to one having ordinary skill in the art.

With respect to claim 11, the Office Action alleges that Ide teaches trimming an end of the bend portion, citing column 13, lines 52-67. In response, Applicants respectfully submit that Ide cannot disclose such a trimming. In Ide, the cutting is performed by the cutting mechanism 20, as discussed above. Also as discussed above, no portion of the intermediate molten member 16 moves closer to the fixed die. In other words, no bent end portion is formed of the intermediate molten member 16. Additionally, even if a bent end portion was formed during the compression of the intermediate molten member 16, this occurs after the cutting by the cutting mechanism 20. Thus, it is impossible for cutting mechanism 20 to trim an end of a “bent end portion,” of intermediate molten member 16, since no such bent end portion exists at this point in the process of Ide.

Additionally, Applicants respectfully submit that the combination of Ide and Koji does not disclose or suggest “protruding portions,” a “leg portion” and the steps of “removing the protruding portions,” “removing the leg portion,” as recited by claim 13.

Finally, Applicants respectfully submit that the combination of Ide and Koji does not disclose or suggest that “an end portion of the molding body protrudes from an end of the fixed die,” as recited by claim 24, since the entire intermediate molten member 16 is contained within the half molds 24a and 24b, without any part of the intermediate molten member 16 protruding therefrom. The combination of Ide and Koji also does not disclose a fixed die and two movable punches. In the combination of Ide and Koji, there exist only two mold halves. Even if bottom

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half mold 24b is regarded as a fixed die and if top half mold 24a is regarded as a first movable punch, the combination of Ide and Koji lacks a second movable punch.

Accordingly, for at least the reasons discussed above, Applicants respectfully submit that the Office Action has not established *prima facie* obviousness. Furthermore, even if the Office Action did establish *prima facie* obviousness, it would not have been obvious to one having ordinary skill in the art to combine the cited references as alleged by the Office Action. Therefore, Applicants respectfully submit that the pending rejection is improper, and respectfully request that it be withdrawn.

**Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Ide and Koji in further view of Costello (U.S. Patent No. 3,655,173).**

It is the position of the Office Action that the combination of Ide and Koji discloses the invention as claimed, with the exception of the reflecting mirror and the lamp being farther than the focal length. The Office Action relies on Costello to provide this teaching. In response, Applicants respectfully submit that claim 4 is patentable at least due to its dependency on claim 1, which Applicants submit is patentable for at least the reasons discussed above. Favorable reconsideration is respectfully requested.

**Claims 7-10 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ide and Koji in further view of Loy (U.S. Patent No. 3,839,680).**

With regard to claim 7, the Office Action appears to be of the position that the combination of Ide and Koji does not disclose pressing at an angle which divides the bending angle of the fixed die into half. The Office Action relies on Loy to provide this teaching. In response, Applicants first respectfully submit that claim 7 is patentable at least due to its dependency on claim 5, which Applicants submit is patentable for at least the reasons discussed above.

Additionally, since Ide discloses pressing in a direction perpendicular, not oblique, to the molded body, its teachings are not combinable with Loy. Further, in Loy, the pressing results in an end portion being moved farther away from the pressed fixed die, not closer, as required by claim 5. Thus, the combination of Ide, Koji and Loy does not disclose or suggest the embodiment as recited by claim 7.

With regard to claim 8, the Office Action appears to be of the position that the combination of Ide and Koji does not disclose that the predetermined path of the press forming is a non-linear path. In response, Applicants first respectfully submit that claim 8 is patentable at least due to its dependency on claim 5, which Applicants submit is patentable for at least the reasons discussed above.

Additionally, Applicants note that the Office Action refers to item 72 of Loy, stating that it is attached to a fixed-length arm. However, Figure 5 includes air cylinder 72 and downward projection 72, and it is unclear which the Office Action refers to. Regardless, Applicants

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respectfully submit that the forming die 70, which presses the countertop 15, follows a linear path according to the movement of air cylinder 72. Thus, the combination of Ide, Koji and Loy does not disclose or suggest the embodiment as recited by claim 8.

With regard to claim 9, the Office Action appears to be of the position that the combination of Ide and Koji does not disclose that the nonlinear path is separate from the dividing line of the bending angle except in the vicinity of engaging the fixed die. The Office Action relies on Loy to provide this teaching. In response, Applicants first respectfully submit that claim 9 is patentable at least due to its dependency on claims 5 and 8, which Applicants submit are patentable for at least the reasons discussed above.

Additionally, the Office Action alleges that the “actuator of Loy (Item 72) would operate in an arc.” As noted above, Applicants respectfully submit that the forming die 70, which presses the countertop 15, follows a linear path according to the movement of air cylinder 72. Thus, the combination of Ide, Koji and Loy does not disclose or suggest the embodiment as recited by claim 9.

With regard to claim 10, the Office Action appears to be of the position that the combination of Ide and Koji does not disclose that the fixed die and the movable punch being kept at a constant temperature cooler than the temperature of the end portion. The Office Action relies on Koji and Loy to provide this teaching. In response, Applicants first respectfully submit that claim 10 is patentable at least due to its dependency on claim 5.

Additionally, the Office Action states that both Koji and Loy teach “application of the infrared radiation to only the part to be bend or folded, by their location in an ambient



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environment, the fixed die and the movable punches would obviously have been at an ambient temperature cooler than the temperature of the end portion.” However, Applicants respectfully submit that this alleged teaching of Koji and Loy conflicts with the teachings of Ide. In Ide, the mold halves 24a and 24b are heated or cooled by the heating and cooling device 38. Thus, the temperature of the molds of Ide is not a constant temperature. Therefore, the teachings of Ide conflicts with that of Koji and Loy. Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). MPEP §2143.01(II). However, the Office Action has not considered the conflicting teachings of these references and to what degree one discredits the other. Thus, Applicants respectfully submit that it would not have been obvious to one having ordinary skill in the art to modify claim 10 as alleged by the Office Action.

With regard to claim 12, the Office Action appears to be of the position that the combination of Ide and Koji does not disclose that the end portion is bent while slightly compressed between a forming surface of the fixed die and a forming surface of the movable punch. In response, Applicants respectfully submit that claim 12 is patentable at least due to its dependency on claim 5. Favorable reconsideration is respectfully requested.

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**Claim 14 was rejected under 35 U.S.C. §103(a) as being unpatentable over Ide and Koji in further view of Hideyasu (JP 2001-088155).**

It is the position of the Office Action that the combination of Ide and Koji discloses the invention as claimed, with the exception of embedding a core material having a rigidity larger than that of the molding main body into the leg portion. The Office Action relies on Hideyasu to provide this teaching, pointing to Drawings 15 and 17. Applicants respectfully submit that claim 14 is patentable due to its dependency on claim 13, which Applicants submit is patentable for at least the reasons discussed above. Favorable reconsideration is respectfully requested.

**Claims 25-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ide and Koji in view of Davies (U.S. Patent No. 2,500,895).**

It is the position of the Office Action that the combination of Ide and Koji discloses the invention as claimed, with the exception of the details recited in claims 25-29. In response, Applicants respectfully submit that claims 25-29 are patentable due to their dependency on claim 24, which Applicants submit is patentable for at least the reasons discussed above. Favorable reconsideration is respectfully requested.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

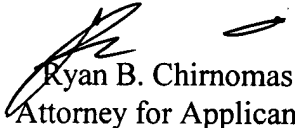
Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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